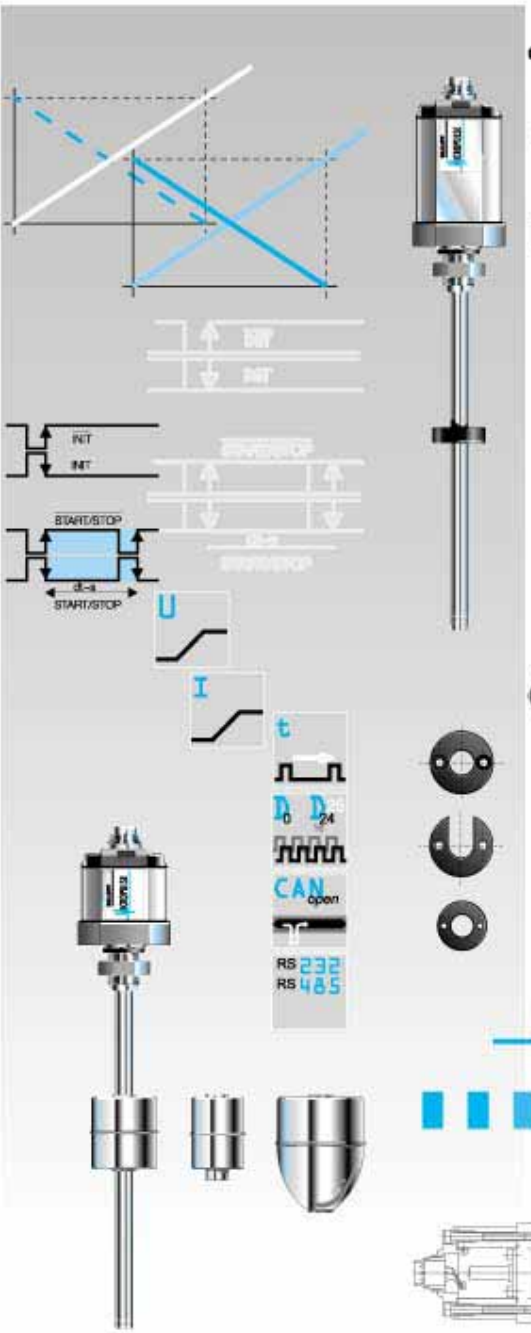
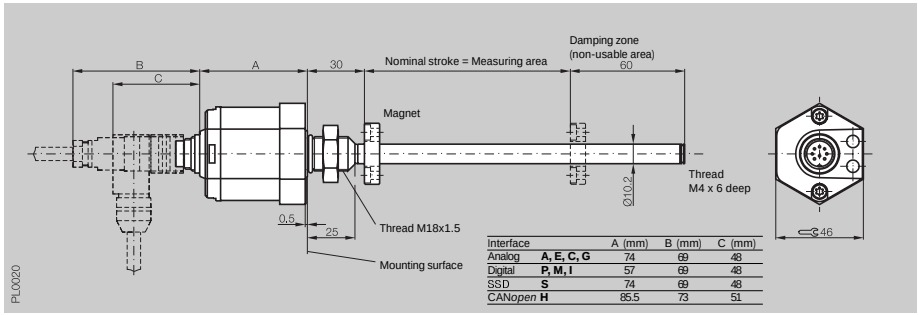


Pressure rated to 600 bar, high repeatability, non-contact, rugged

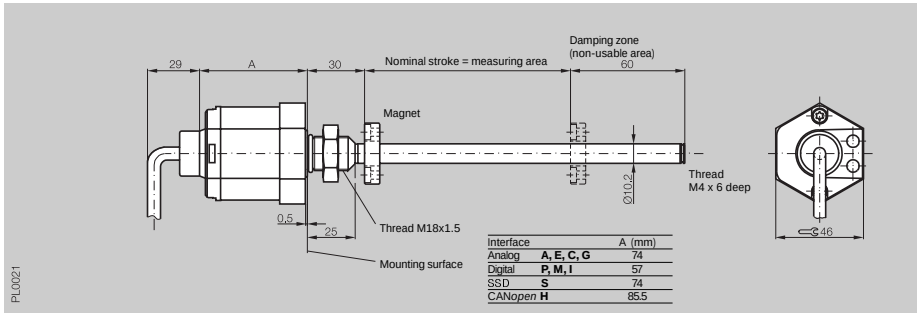
The BTL Micropulse transducer is the rugged position feedback system for use under extreme ambient conditions measuring between 25 and 3850 mm.

The actual waveguide is protected inside a high-pressure resistant stainless steel tube. The system is ideal for use in hydraulic cylinders for position feedback or as a level monitor with aggressive media in the food and chemical industries.

Series	**BTL5 Rod-style**



Interface		A (mm)	B (mm)	C (mm)
Analog	**A, E, C, G**	74	69	48
Digital	**P, M, I**	57	69	48
SSD	**S**	74	69	48
CAN*open*	**H**	85.5	73	51



Interface		A (mm)
Analog	**A, E, C, G**	74
Digital	**P, M, I**	57
SSD	**S**	74
CAN*open*	**H**	85.5

Ordering code	BTL5-...-M_ _ _ _-B-_ _ _ _
Shock load	100 g/6 ms per IEC 68-2-27 and 100 g/2 ms per IEC 68-2-29
Vibration	12 g, 10...2000 Hz per IEC 68-2-6
Polarity reversal protected	yes
Overvoltage protection	Transzorb protection diodes
Dielectric strength	500 V (GND to housing)
Enclosure rating per IEC 529	IP 67 (when BKS-S32/33 is installed)
Housing material	anodized aluminum/1.4571 stainless tube, 1.3952 stainless investment case flange
Mounting	thread M18 × 1.5, 3/4"-16UNF on request
Pressure rating	600 bar installed in hydraulic cylinder
Connection type	connector or integral cable
Recommended connectors see page **B.**16	BKS-S 32M/BKS-S 32M-C/BKS-S 33M/(CAN*open*: BKS-S 92M-00/S 93M-00)
Emissions tests:	
RF emission	EN 55 011 Group 1, Class A
Noise immunity tests:	
Static electricity (ESD)	IEC 1000-4-2 Severity Level 3
Electromagnetic fields (RFI)	IEC 1000-4-3 Severity Level 3
Fast transients (BURST)	IEC 1000-4-4 Severity Level 4
Line-carried noise, induced by high-frequency fields	IEC 1000-4-6 Severity Level 3
Standard nominal strokes [mm]	0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0375, 0400, 0425, 0450, 0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request

▶ Included:
- Transducer (see starting **B.**4 for interface options)
- Jam nut M18×1.5
- User's manual

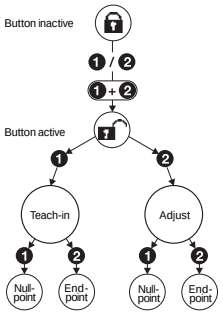
Please order separately:
Magnets page **B.**12
Floats page **B.**13
Connectors page **B.**16

100 % stroke adjustment

Micropulse Transducer | Analog interface Rod series

100 % Null- and endpoint calibration

Null and endpoint of the analog signal can be button-set to the desired position. Depending on the application, teach-in or adjust mode is used, selectable by pressing a button combination.



Cal mode selection

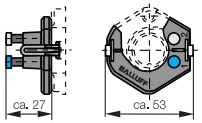
Teach-in

You wish to replace the factory set null and endpoint with new values. First move the magnet to the new null, then to the new end position and store their associated value by pressing the button.

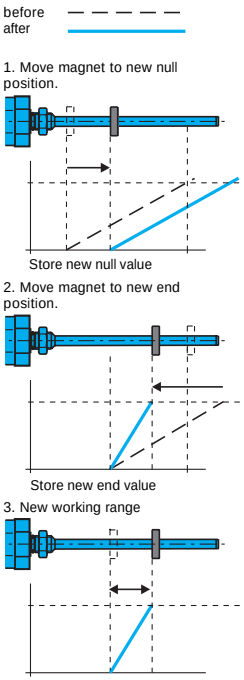
Adjust

Here you can adjust to a new start and/or end value. This may be required when you cannot physically move the magnet to the standard null and/or endpoint.
Alternately move the magnet to the new start and end position, and adjust the displayed value by pressing the button until the desired output values are reached.

Calibration device 112774

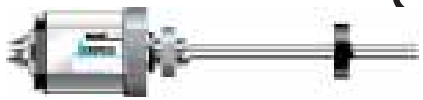


Sequence for teach-in, rising output signal

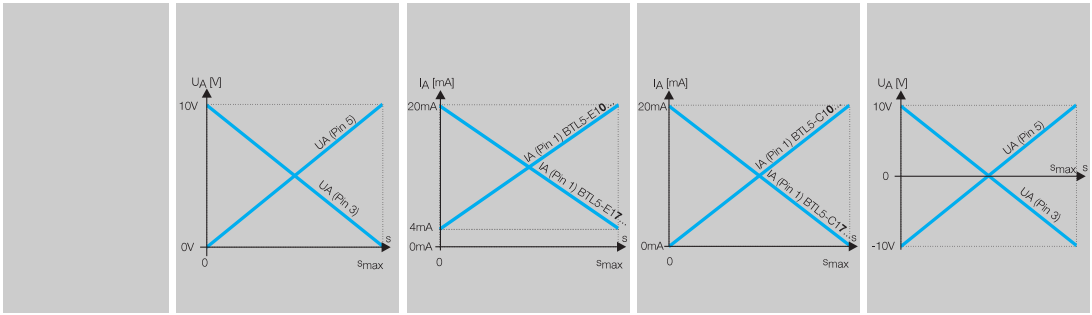


Micropulse BTL5-A/C/E/G...B features

- 100 % adjustment of analog signal
- 2 calibration modes: Teach-in and Adjust for null and endpoint
- Electronics head can be replaced if damaged
- Short housing



Series			BTL5 Rod	BTL5 Rod	BTL5 Rod	BTL5 Rod
Output signal			analog	analog	analog	analog
Transducer interface			**A**	**E**	**C**	**G**
Input interface			analog	analog	analog	analog



Ordering code			BTL5-**A11**-M____-B-____	BTL5-**E1**_-M____-B-____	BTL5-**C1**_-M____-B-____	BTL5-**G11**-M____-B-____
Output voltage			**0...10 V and 10...0 V**			**–10...10 V and 10...–10 V**
Output current				**4...20 mA or 20...4 mA**	**0...20 mA or 20...0 mA**	
Load current			max. 5 mA			max. 5 mA
max. ripple			≤ 5 mV			≤ 5 mV
Load resistance				≤ 500 Ohm	≤ 500 Ohm	
System resolution			≤ 0.33 mV	≤ 0.66 µA	≤ 0.66 µA	≤ 0.33 mV
Hysteresis			≤ 5 µm			
Repeatability			≤ 10 µm (hysteresis + resolution)			
Internal sampling frequency			$f_{STANDARD}$ = 2 kHz			
max. non-linearity			±100 µm to 500 mm nominal stroke ±0.02 % 500...3850 mm nominal stroke			
Temperature coefficient	Voltage output		[150 µV/°C + (5 ppm/°C × P × U/L)] × ΔT			
	Current output		[0.6 µA/°C + (10 ppm/°C × P × I/L)] × ΔT			
Traverse velocity of magnet			any			
Operating voltage			24 V DC ±20 %			
Current draw			≤ 150 mA			
Polarity reversal protected			yes			
Overvoltage protection			Transzorb protection diodes			
Dielectric constant			500 V (ground to housing)			
Operating temperature			–40...+85 °C			
Storage temperature			–40...+100 °C			

Pin assignments	Pin	Color	BTL5-A11...	BTL5-E10...	BTL5-E17...	BTL5-C10...	BTL5-C17...	BTL5-G11...
Output signals	1	YE		4...20 mA	20...4 mA	0...20 mA	20...0 mA	
	2	GY	0 V output	0 V output		0 V output		0 V output
	3	PK	10...0 V					10...–10 V
	5	GN	0...10 V					–10 ... 10V
Supply voltage	6	BU	GND	GND		GND		GND
	7	BN	+24 V DC	+24 V DC		+24 V DC		+24 V DC
	8	WH	(GND)	(GND)		(GND)		(GND)

Connect shield to housing.

– Error signal:
Output signals above or below the preset values can be interpreted and reported with an error signal.
Example: no magnet in measuring range or start program mode.

▶ Included:
– Transducer
– Jam nut
– Calibration device 112774
– User's manual

Please order separately:
Magnets page **B.**12
Connectors page **B.**16

▶ Please enter code for output signal, nominal stroke and connection type in ordering code!

▶ Preferred models interface A11 and E10
BTL5-A11-M____-B-S 32,
BTL5-E10-M____-B-S 32
marked in blue are available from stock.

Ordering example:
BTL5-E1_-M____-B-____

Output signal
1 increasing and decreasing (for A and G)
0 increasing
7 decreasing (for C and E)

Standard nominal strokes [mm]
0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0375, 0400, 0425, 0450, 0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request.

Connection type
S 32 Connector
KA02 PU cable 2 m
KA05 PU cable 5 m
KA10 PU cable 10 m
KA15 PU cable 15 m

cost-effective

Temperature range -40...+85 °C

P-Interface

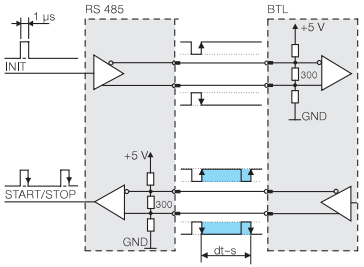
Compatible with BTA processors and various OEM controls, e. g., Siemens, Schleicher, B & R, Mitsubishi, Schiele, Parker, Esitron, Philips, Fanuc and others.
Reliable signal transmission, even over cable lengths up to 500 m between BTA and BTL, is assured by the especially noise-immune RS485 differential drivers and receivers. Noise signals are effectively suppressed.

M-Interface

The I- and M-interfaces are control-specific interface variations.

I-Interface

Used for parallel operation of multiple transducers, for example up to 4 transducers can be operated by a single BTA-M/PMT card (see page **A.**2 in Profile brochure).

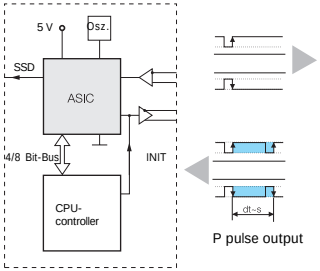


Block diagram for P-Interface

Highly precise digitizing of the P-interface signal

Companies developing their own control and processing electronics can create a highly accurate P-interface cost effectively and with a minimum of effort using the Balluff digitizing chip. The digitizing chip was developed as a high-resolution, configurable ASIC for the Micropulse P-interface.

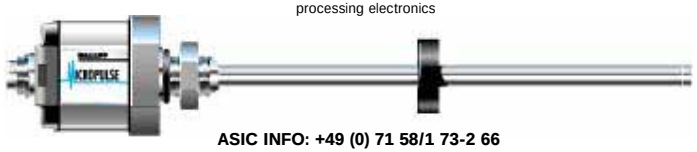
44QFP digitizing chip



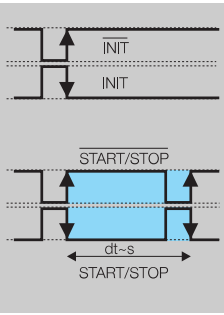
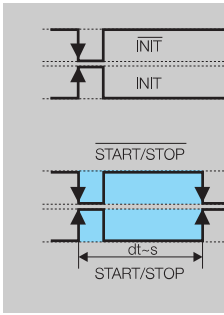
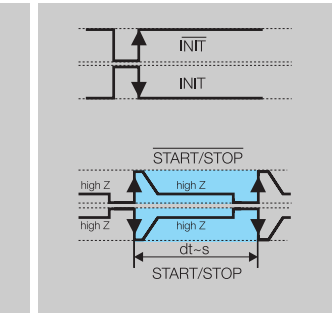
Controller or processing electronics

P pulse output

Micropulse transducer with 1 to 4 magnets



ASIC INFO: +49 (0) 71 58/1 73-2 66

Series			BTL5 Rod	BTL5 Rod	BTL5 Rod
Transducer interface			pulse **P**	pulse **M**	pulse **I**
User interface			pulse **P**	pulse **M**	pulse **I**
					
Ordering code			BTL5-**P**1-M____-B-____	BTL5-**M**1-M____-B-____	BTL5-**I**1-M____-B-____
System resolution			processing-dependent		
Repeatability			≤ 6 µm (hysteresis + resolution)		
Resolution			≤ 2 µm		
Hysteresis			≤ 4 µm		
Internal sampling rate			$f_{STANDARD}$ = 1 kHz = ≤ 1400 mm		
max. non-linearity			±100 µm to 500 mm nominal stroke		
			±0.02 % 500...3850 mm nominal stroke		
Temperature coefficient of the overall system			(6 µm +5 ppm × L)/°C		
Traverse velocity of magnet			any		
Operating voltage			24 V DC ±20 %		
Current draw			≤ 100 mA		
Operating temperature			–40...+85 °C		
Storage temperature			–40...+100 °C		

Pin assignments		Pin	Color	BTL5-**P**1-M...	BTL5-**M**1-M...	BTL5-**I**1-M...
Input/output signals	Input	1	YE	INIT	INIT	INIT
	Output	2	GY	START/STOP	START/STOP	START/STOP
	Input	3	PK	$\overline{\text{INIT}}$	$\overline{\text{INIT}}$	$\overline{\text{INIT}}$
	Output	5	GN	$\overline{\text{START/STOP}}$	$\overline{\text{START/STOP}}$	$\overline{\text{START/STOP}}$
Supply voltage		6	BU	GND	GND	GND
		7	BN	+24 V DC	+24 V DC	+24 V DC
		8	WH	(GND)	(GND)	(GND)

Shield connected to housing.

Benefits

- High resolution: the 2 µm actual resolution of the BTL transducer is fully supported by the 5 µm resolution of the chip (at low clock frequency 2 or 20 MHz)
- Position data from 4 magnets can be processed simultaneously
- 4/8-bit processor interface

▶ Please enter code for nominal stroke and connection type in ordering code!

▶ Preferred P-interface models
BTL5-P1-M____-B-S 32 marked in blue are available from stock.

▶ Included:
- Transducer
- Jam nut
- User's manual

Please order separately:
Magnets page **B.**12
Connectors page **B.**16

Ordering example:
BTL5-P1-M____-B-____

Standard nominal strokes [mm]

0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0375, 0400, 0425, 0450, 0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request.

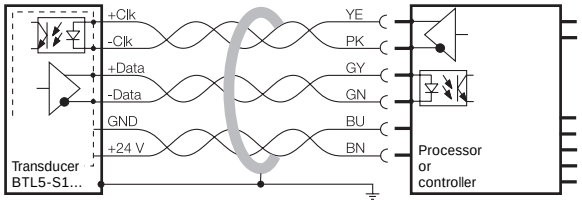
Connection type

S 32	Connectors
KA02	PU cable 2 m
KA05	PU cable 5 m
KA10	PU cable 10 m
KA15	PU cable 15 m

SSD Interface

Synchronous serial data transmission for controls made by Siemens, Schleicher, B & R, Mitsubishi, Schiele, Parker, Esitron, Philips, Fanuc etc. as well as for Balluff BDD-AM10-1-SSD display/controller with two relay outputs.

Reliable signal transmission, even over cable lengths of up to 400 m between control and BTL transducer is assured by especially noise-immune RS485/422 differential line drivers and receivers. Any noise signals are effectively suppressed.



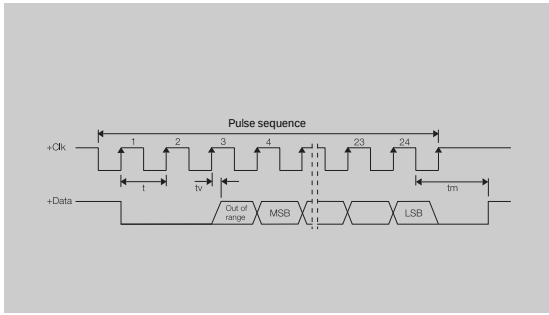
BTL5-S1... with processor/controller, wiring example

Clock frequency depends on cable length

Cable length	Clock frequ.
< 25 m	< 1000 kHz
< 50 m	< 500 kHz
< 100 m	< 400 kHz
< 200 m	< 200 kHz
< 400 m	< 100 kHz

Super-fast 2 kHz Sampling rate

Series	**BTL5 Rod**
Output signal	synchronous-serial
Transducer interface	**S**
User interface	synchronous-serial



Ordering code	BTL5-**S1**_ _-M_ _ _ _-B-S 32
Repeatability	≤ 2 Digit (hysteresis + system resolution)
System resolution depending on version (LSB)	5, 10, 20 or 40 µm
Hysteresis	≤ 1 Digit
Internal sampling rate	$f_{STANDARD}$ = 2 kHz
max. non-linearity	±30 µm for 5 and 10 µm resolution or ≤ ±2 LSB
Temperature coefficient of the overall system	(6 µm +5 ppm × L) /°C
Shock loading	100 g/6 ms per IEC 68-2-27 and 100 g/2 ms per IEC 68-2-29
Vibration	12 g, 10...2000 Hz per IEC 68-2-6
Traverse velocity of magnet	any
Operating voltage	24 V DC ±20 %
Current draw	≤ 80 mA
Operating temperature	–20...+85 °C
Storage temperature	–20...+100 °C

Pin assignments	Pin	Color	
Control and data signals	1	YE	+Clk
	2	GY	+Data
	3	PK	–Clk
	5	GN	–Data
Supply voltage (external)	6	BU	GND
	7	BN	+24 V DC
	8	WH	must remain unconnected

▶ Please enter code for coding, system resolution, nominal stroke and connection type when ordering!

Ordering example:
BTL5-S1_ _-M_ _ _ _-B-_ _ _ _

Coding		**System resolution**		**Standard nominal strokes [mm]**	**Connection type**	
0	Binary increasing (24 bits)	2	5 µm	0025, 0050, 0075, 0100, 0125, 0150, 0175, 0200, 0225, 0250, 0275, 0300, 0325, 0350, 0375, 0400, 0425, 0450, 0475, 0500, 0550, 0600, 0650, 0700, 0750, 0800, 0850, 0900, 0950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request.	S 32	Connector
1	Gray increasing (24 bits)	3	10 µm		KA02	PU cable 2 m
6	Binary increasing (25 bits)	4	20 µm		KA05	PU cable 5 m
7	Gray increasing (25 bits)	5	40 µm		KA10	PU cable 10 m
					KA15	PU cable 15 m

▶ Included:
– Transducer
– Jam nut
– User's manual

Please order separately:
Magnets page **B.**12
Floats page **B.**13
Connectors page **B.**16

BTL B
General data
Analog interface
Digital pulse interface
SSD interface
CAN*open* interface
Magnets and floats
Installation notes
Connectors

CAN*open* Draft Standard 406 (Encoder Profile)

CAN*open* Interface

The CAN*open* interface of the Micropulse transducer is compatible with CAN*open* per CiA Standard DS-301 Rev. 3.0, CAL and Layer 2 CAN networks. There are 2 versions depending on the data arrangement in the object directory: Object directory per Draft Standard 406 (Encoder Profile DS406) and manufacturer-specific to Balluff standard (Balluff Profile).

Process Data Object (PDO)

Micropulse transducers send their position information optionally in one or two PDOs with 8 bytes of data each. The contents of the PDOs is free configurable.

You can send:
- the current position of the magnet with resolution selectable for 5, 10, 20, 50 and 100 µm
- the current velocity of the magnet with resolution selectable for 0.1, 0.5 and 1 mm/s
- the current status of four free programmable setpoints (cams)
- the position and the velocity format integer 32/16 with selectable resolution

Synchronisation Object (SYNC)

Serves as a net-wide trigger for synchronizing all network participants. When the SYNC object is received, all Micropulse transducers active on the bus store their current position and velocity information and then send it sequentially to the control. This assures time-synchronous capture of the measured values.

Cam-dependent transmission rate

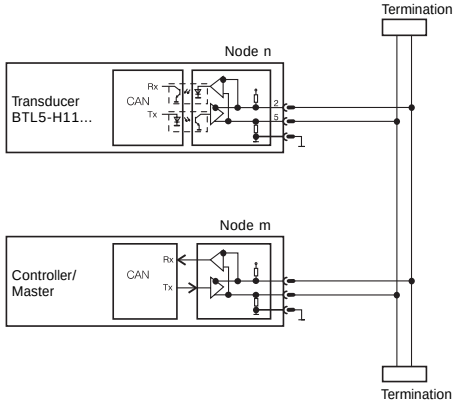
Active cams can be used to program high, cyclical data transmission.

Emergency Object

Emergency Object means: transmitting data with the highest priority. This is used for example for error messages when cam states change.

Service Data Object (SDO)

Service Data Objects transmit the parameters for the transducer configuration. The transducer configuration may be carried out on the bus by the controller, or offline using a PC with a configuration tool which runs under Windows. The configuration is stored in the transducer in a non-volatile memory.



BTL Configuration Tool CAN*open* for BTL5-H10_-... (Balluff Profile)

is a user-friendly software for parameterizing the BTL and for mapping the BTL data in the PDOs. It can also be used for test purposes

or for reading out the BTL parameters and LMT data. Runs under Windows 3.11 or higher.

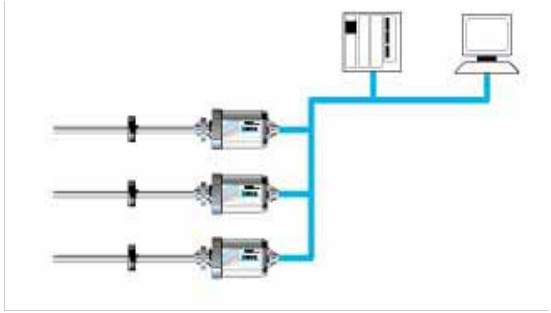
Functionality:
- Menu-driven configuration of all manufacturer-specific module parameters and module-specific communications parameters. Checking entries for valid values.
- LMT data, consisting of: manufacturer's name (7 characters), product name (7 characters) and serial no. (14 characters).
- Node-ID and baud rate.
- Setting the working range and cam switchpoints. The parameters can also be configured in teach-in mode, whereby the resp. current position is read in by the configuration tool.
- Operating mode selection for sending and preparing BTL data: continuous, on-demand, event-triggered.
- Arrangement of the BTL data (position, velocity and status) in the data field of the PDO (object mapping).

The configuration entered is sent to the BTL module and there stored in the object directory. At the same time, the object directory is stored in the configuration tool. The configuration parameters, which are stored in a database, can for example be copied from one module to another (e. g., when replacing modules).

CAN-Bus-Interface on a PC:
1. CANdy*
   Connects to the parallel interface
2. PCI-302*
   Plug-in card with bus analyzer function

*Products of Steinbeis Transferzentrums Prozessautomatisierung Weingarten.

Series		**BTL5 Rod-style**							
Output signal		CAN*open*							
Transducer interface		**H**							
User interface		CAN*open*							



Ordering code		BTL5-**H**1_ _-M_ _ _ _-B-S 92							
CAN*open* interface		potential-free							
Repeatability		≤ 2 digit (hysteresis + system resolution)							
System resolution	Position	5, 10, 20, 50 and 100 µm							
configurable	Velocity	0.1 mm/s, 0.5 mm/s, 1 mm/s							
Hysteresis		≤ 1 digit							
Internal sampling rate		$f_{STANDARD}$ = 2 kHz							
max. non-linearity		±30 µm at 5 µm resolution							
Temperature coefficient of the overall system		(6 µm +5 ppm × L)/°C							
Traverse velocity of magnet		any							
Operating voltage		24 V DC ±20 %							
Current draw		≤ 100 mA							
Operating temperature		–20...+85 °C							
Storage temperature		–20...+100 °C							
Cable length [m] per CiA DS 301		< 25	< 50	< 100	< 250	< 500	< 1000	< 1250	< 2500
Baud rate [kBaud] per CiA DS 301		1000	800	500	250	125	100	50	20/10

Pin assignments	Pin	Color	
Control and data signals	1	WH	CAN_GND
	2	BN	+24 V
	3	BU	0 V (GND)
	4	GY	CAN_HIGH
	5	GN	CAN_LOW

Using the CAN*open* interface and cable lengths up to 2500 m, the signal is sent at a length-dependent baud rate to the control. The high noise immunity of the connection is achieved using differential drivers and by the data monitoring scheme implemented in the data protocol.

▶ Included:
- Transducer
- Jam nut
- User's manual
- Configuration and CAN interface

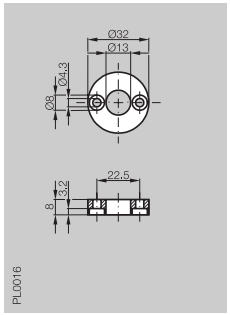
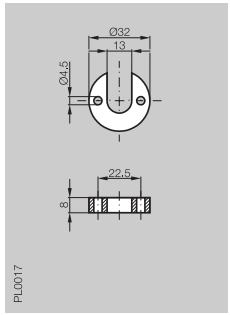
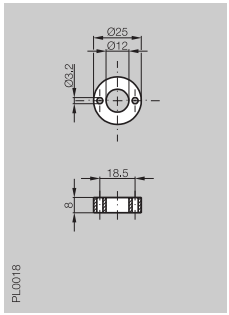
Please order separately:
Magnets page **B.**12
Floats page **B.**13
Connectors BKS-S92/BKS-S93 page **B.**16

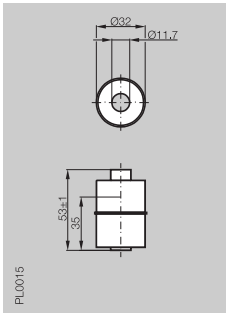
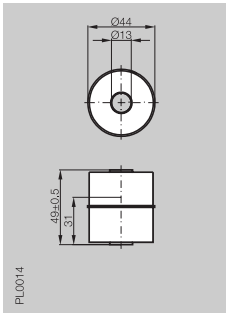
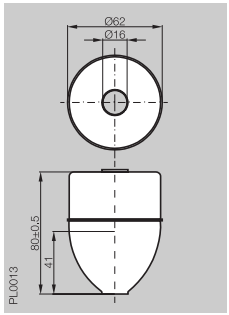
▶ Please enter code for software configuration, baud rate and nominal length when ordering! Cable upon request.

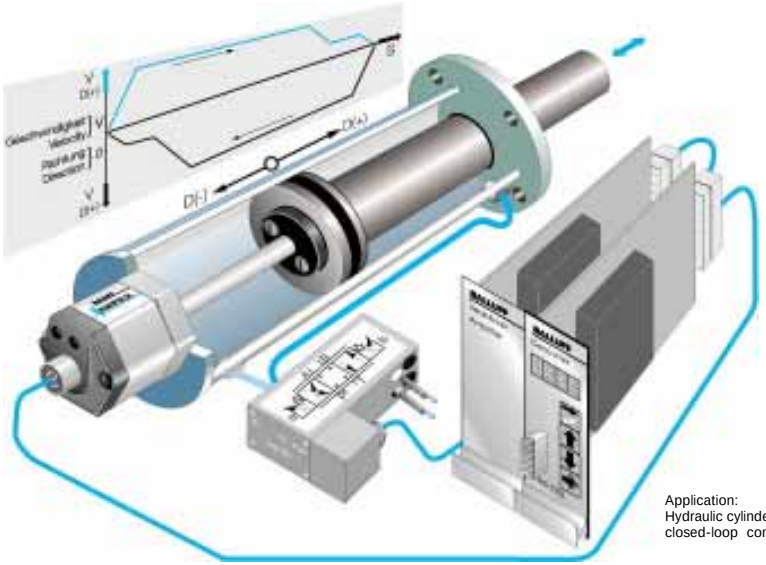
Ordering example:
BTL5-H1_ _-M_ _ _ _-B-S 92

Software configuration		**Baud rate**		**Standard nominal strokes [mm]**
0	1 × position and 1 × velocity OV per Balluff Profile	0	1 MBaud	0025, 0050, 0075, 0100,
1	1 × position and 1 × velocity OD per DS 406	1	800 kBaud	0125, 0150, 0175, 0200,
2	2 × position and 2 × velocity OD per DS 406	2	500 kBaud	0225, 0250, 0275, 0300,
3	4 × position OD per DS 406	3	250 kBaud	0325, 0350, 0375, 0400,
		4	125 kBaud	0425, 0450, 0475, 0500,
		5	100 kBaud	0550, 0600, 0650, 0700,
		6	50 kBaud	0750, 0800, 0850, 0900,
		7	20 kBaud	0950, 1000, 1100, 1200,
		8	10 kBaud	1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2250, 2500, 2750, 3000, 3250, 3500, 3750, 3850 or in 5 mm increments on request.

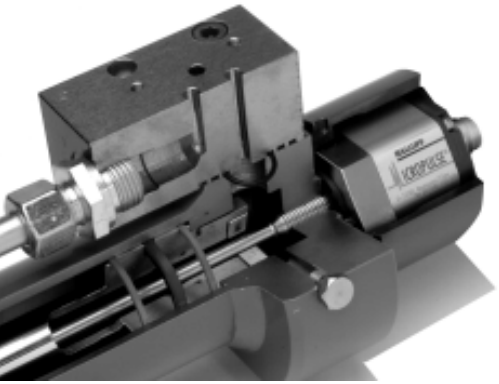
OD = Object Directory
DS406 = Encoder Profile

Name	**Magnet**	**Magnet**	**Magnet**
for series	BTL5 Rod	BTL5 Rod	BTL5 Rod
			
Ordering code aluminum	BTL-P-1013-4R	BTL-P-1013-4S	BTL-P-1012-4R
Material	aluminum	aluminum	aluminum
Weight	ca. 12 g	ca. 12 g	ca. 12 g
Traverse velocity of magnet	any	any	any
Operating temperature/storage temperature	–40...+100 °C	–40...+100 °C	–40...+100 °C
Ordering code PA 60 fiberglass reinforced	BTL-P-1013-4R-PA		BTL-P-1012-4R-PA
Material	PA 60 fiberglass reinforced		PA 60 fiberglass reinforced
Weight	ca. 10 g		ca. 9 g
Traverse velocity of magnet	any		any
Operating temperature/storage temperature	–40...+100 °C		–40...+100 °C

Name	**Float**	**Float**	**Floats**
for series	BTL5 Rod	BTL5 Rod	BTL5 Rod
			
Ordering code	BTL2-S-3212-4Z	BTL2-S-4414-4Z	BTL2-S-6216-8P
Material	1.4571 stainless	1.4571 stainless	1.4571 stainless
Weight	ca. 20 g	ca. 35 g	ca. 66 g
Traverse velocity of magnet	any	any	any
Operating/storage temp.	–40...+120 °C	–40...+120 °C	–40...+120 °C
Submersion depth in water	35 mm	31 mm	41 mm
Pressure rating	24 bar	20 bar	15 bar



Application:
Hydraulic cylinder with closed-loop control

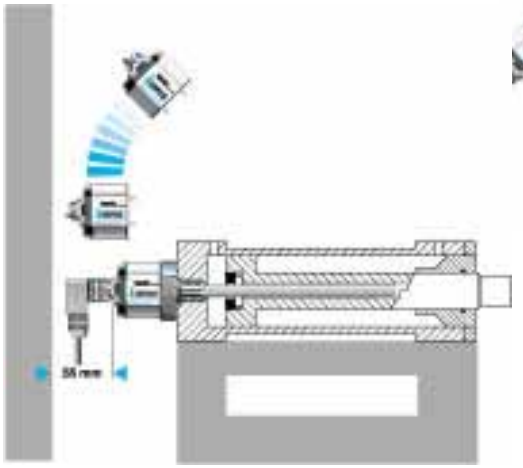


Installation in hydraulic cylinders

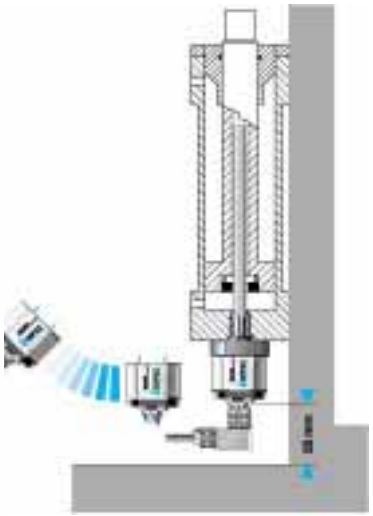
Hassle-free service

Cylinder-mounted transducers are often located in difficult to access spots. If a transducer is damaged or fails, replacing the complete transducer with head and waveguide is often a difficult and expensive proposition.

Should a problem occur in the electronics of the Micropulse transducer, the electronics head can be easily and quickly exchanged for a new one. The fluid circuit also remains intact, with no draining necessary.



Servicing a horizontal installation

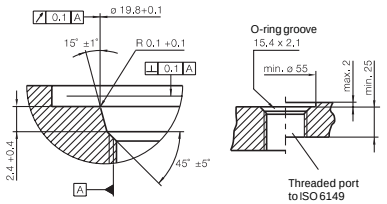


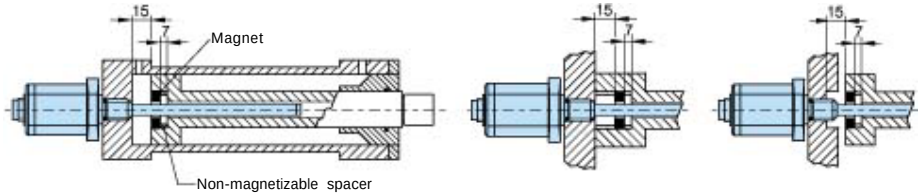
Servicing a vertical installation

Installation

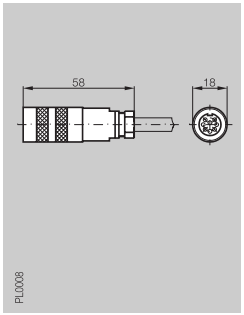
The BTL Micropulse transducer is provided with an M18 × 1.5 mounting thread. We recommend mounting into non-magnetizable materials.

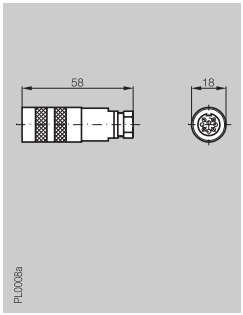
If magnetizable materials are used, the installation must be carried out as shown in the drawing below. Sealing is at the flange mounting surface, using the supplied O-ring 15.4 × 2.1 with the M18 x 1.5 thread.

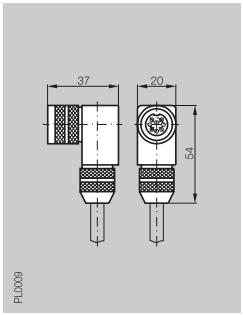




Connectors	**BKS-S 32M**	**BKS-S 32M-C**	**BKS-S 33M**
for series	BTL5	BTL5	BTL5
Version	straight	straight	right-angle







Ordering code	BKS-S 32M-_ _	BKS-S 32M-C-00	BKS-S 33M-_ _
Crimp contacts		max. 0.5 mm²	
Solder connection	max. 0.75 mm²		max. 0.75 mm²
Housing material	CuZn, nickel plated	CuZn, nickel plated	ZnAlCu1, nickel plated
Contact	CuSn	CuSn	CuSn
Contact surface	0.8 µm Au	0.8 µm Au	0.8 µm Au
Cable strain relief	PG 9	PG 9	PG 9
min. cable diameter	6...8 mm	6...8 mm	6...8 mm
Cable	Lif2Y-FC-11Y- 0		Lif2Y-FC-11Y- 0
No. of conductors × cross-section	7 × 0.25 mm²		7 × 0.25 mm²
Enclosure rating per IEC 529	IP 67 (when connected)	IP 65 (when connected)	IP 67 (when connected)

Please indicate cable length in ordering code!
Code 00 for unassembled (use shielded cable).
Code 05, 10, 15, 20, 25 30 m for finished assembled cable.

Connectors for Micropulse with CAN*open* Interface

Ordering code	BKS-S 92M-00		BKS-S 93M-00
Screw terminal	max. 0.75 mm²		max. 0.75 mm²
Housing material	CuZn, nickel plated		CuZn, nickel plated
Contact	CuSn		CuSn
Contact surface	0.8 µm Au		0.8 µm Au
Cable strain relief	PG 9		PG 9
min. cable diameter	6...8 mm		6...8 mm
Enclosure rating per IEC 529	IP 67 (when connected)		IP 67 (when connected)

BKS-S 92/BKS-S 93 compatible, shielded plastic connectors
with molded cable available on request.

BKS-S 32M-_ _/BKS-S 33M-_ _

View of female
solder side

Pin	Color
1	YE
2	GY
3	PK
5	GN
6	BU
7	BN
8	WH

BKS-S 92M-00/BKS-S 93M-00

View of female
screw side

Pin	Signal
1	CAN_GND
2	+24 V
3	GND (0 V)
4	CAN_HIGH
5	CAN_LOW